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1 What is claimed is:

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3 1. A system for position<sup>ing</sup> a tethered spacecraft from a base  
4 spacecraft, the system comprising,

5 a stand-off extending from the base spacecraft for providing  
6 a maximum stand-off distance, <sup>the</sup>

7 a tether~~ed~~ extending the length of stand-off, <sup>A</sup>

8 a tether drive motor for moving the tether the length of the  
9 stand-off, and

10 a fastener for coupling the tethered spacecraft to the  
11 tether, the tether drive motor operated to move <sup>the</sup> tethered  
12 spacecraft to a desired distance from the base spacecraft up to  
13 the maximum stand-off distance. <sup>A</sup>

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15 2. The system of claim 1 wherein,

16 the tether drive motor comprises opposing tether drive  
17 motors, and

18 the stand-off comprises a pulley, the tether extending along  
19 the length of the stand-off and around the pulley and again  
20 along the length of the stand-off, the opposing tether motors  
21 respectively releasing and taking up the tether for extending  
22 and retracting the tether spacecraft away from and toward the  
23 base spacecraft respectively.

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26 3. The system of claim 1 wherein,

27 the fastener is a clamp.

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1 4. The system of claim 1 wherein,

2 the tether is a metal belt operated as a belt drive.

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4 5. The system of claim 1 wherein the stand-off is a semirigid  
5 metallic tape, the system further comprising,

6 a stand-off reel motor for releasing and taking up the  
7 semirigid metallic tape.

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9 6. The system of claim 1 wherein the stand-off is a semirigid  
10 metallic tape having a concave surface, the system further  
11 comprising,

12 a stand-off reel motor for releasing and taking up the  
13 semirigid metallic tape.

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1 7. A system for position<sup>ing</sup> a tethered spacecraft from a base  
2 spacecraft, the system comprising,  
3 a stand-off extending from the base spacecraft for providing  
4 a maximum stand-off distance,  
5 a stand-off reel motor coupled to the base spacecraft for  
6 taking up and releasing the stand-off to the maximum stand-off  
7 distance,  
8 a pulley disposed at a distal end of the stand-off at the  
9 maximum stand-off distance,  
10 the tether extending along the length of the stand-off and  
11 around the pulley and again along the length of the stand-off,  
12 opposing tether drive motors for taking up and releasing the  
13 tether extending between the opposing tether drive motors, and  
14 a clamp for coupling the tethered spacecraft to the tether,  
15 the opposing tether drive motor operated to move the tethered  
16 spacecraft to a desired distance from the base spacecraft up to  
17 the maximum stand-off distance.

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20 8. The system of claim 1 wherein,  
21 the tether is a metal belt operated as a belt drive.

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24 9. The system of claim 1 wherein the stand-off is a semirigid  
25 metallic tape, the system further comprising,  
26 a stand-off reel motor for releasing and taking up the  
27 semirigid metallic tape.

1 10. The system of claim 1 wherein the stand-off is a semirigid  
2 metallic tape having a concave surface, the system further  
3 comprising,  
4 a stand-off reel motor for releasing and taking up the  
5 semirigid metallic tape.

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